

Sharing an environment

U.S. Army spec ops simulation database opens to Air Force

By BEN IANNOTTA

Now that CAE's work on a powerful new database for the U.S. Army's Special Forces helicopter simulators is moving toward operational status, acquisition managers are pushing the same concept into the Air Force special operations world by providing technical information to CAE's rival, FlightSafety International.

The new approach calls for different simulators to feed off a common database by using software that converts data into compatible formats on the fly. If it works as planned, it could open the door to more-realistic mission rehearsals involving an array of Army and Air Force special operations aircraft, said officials working on the project.

Someday, an Air Force special operations pilot inside an AC-130 gunship simulator might look at his instruments and see Army MH-47G Chinook and MH-60L Black Hawk Special Forces helicopters. The pilots of those helicopters could be sitting inside Army simulators hundreds of miles away. Because the simulators would be drawing information from the same database, the pilots would see compatible views of mountains, buildings and roads, and also of the dynamic environment, such as swirling weather fronts and computer-generated friendly and enemy forces.

In terms of contracting efficiency, the goal of the Common Environment/Common Database (CE/CDB) initiative is to get contractors out of the business of building unique databases for each simulator, and the simulated sensors within each simulator, said Army Lt. Col. Kevin Mobley, acting product manager for special operations forces systems at the Army's Program Executive Office for Simulation Training and Instrumentation (PEO STRI) in Orlando, Fla. At the moment, a helicopter's simulated forward-looking infrared camera, for example, must be backed by its

own database. This plethora of incompatible databases has made updating simulators a time-consuming, costly chore.

"With the [common database], I do the update one time, and it's populated. If you have multiple locations doing updates, one location can do it and share it with the other locations. Your workload is drastically reduced," Mobley said.

CAE devised the architecture for the CE/CDB for PEO STRI, and is building the first simulators that will use the approach. The key to the concept is new run-time publishing software that quickly converts source information into formats that can be understood by image-generator software or by software that simulates the view from radar sensors or other instruments.

"That's really the technological breakthrough here. Instead of allowing a big bank of computers to take days or hours to do this step, we require the simulation computers to do it in a 60th of a second. That was the challenge. That's what people thought couldn't be done three years ago," said David Graham, CAE's director of special operations programs.

Though the underlying database will be common, CAE, FlightSafety and other contractors still must compete to provide the front-end simulator software, including the image generators.

On the surface, going to a common database sounds like bad news for the simulator industry, but a FlightSafety executive said that's not so.

"It's good for the industry because instead of rebuilding the same thing over again, we'll be able to spend our time and energy enhancing existing databases," said Dan Myers, marketing director for FlightSafety's Visual Simulation Systems Division in St. Louis. "Our value added will be in enhancements and more realism," he said. FlightSafety is now making a common database publisher for its Vital 9 image generator, which is at the heart of recent upgrades to the Air Force special operations simulator fleet.

CAE did similar work for the Army by creating a publisher that enables the company's Medallion S image generator to make visual frames out of the common database.

Though CAE and FlightSafety are competi-



CAE

The Common Environment/Common Database architecture allows different simulators to share environments during mission rehearsal.

tors, CAE has shared samples of its publisher source code with FlightSafety as required under its contract with PEO STRI, which retains ownership of the source code.

Providing the source code does not mean FlightSafety can simply plug it into its system, however. "We're not using that source code specifically. It was provided to us as a reference," said Myers. "It was very helpful to understand how they implemented it on the Army simulators," he added.

FlightSafety is on contract to deliver the first Vital 9 common database publisher by January 2008 and demonstrate that it works, Myers said. After that, Air Force Special Operations Command will decide which simulators will receive it first.

Air Force Special Operations Command also has purchased FlightSafety's new Vital X generator. "They've suggested that they may want to implement a Vital X version of the CDB as well," Myers said.

The first simulator that will use the common database will be the one built by CAE for the MH-47G Black Hawks operated by the 160th Special Operations Aviation Regiment at Fort Campbell, Ky. That simulator was in final testing at Fort Campbell in late June, and it was due to be handed over officially to the 160th by July 26, Mobley said. CAE will take the first weeks of July to make some inevitable last minute tweaks, he said.

Next year, CAE is due to deliver a new simulator for the Army's latest MH-60 Chinooks. ■